2-2018

Evolution of digital payments: Early learnings from Singapore's cashless payment drive

Dennis NG
Singapore Management University, dennis.ng.2016@dba.smu.edu.sg

Evolution of Digital Payments: Early Learnings From Singapore's Cashless Payment Drive

Dennis Ng

Lee Kong Chian School of Business, Singapore Management University,
50 Stamford Road, Singapore 178899, Republic of Singapore
Email: dennig.ng.2016@dba.smu.edu.sg

Dennis Ng *is a doctoral student at the Lee Kong Chian School of Business, Singapore Management University. He was formerly Country Manager and Director Asia Pacific for Visa Worldwide where he held positions with responsibility for product development and marketing. Dennis continues to consult in areas of payments and fintech. His academic research looks at three main themes. The first is a strategic analysis of the payment landscape and how payment providers can continue to remain relevant in today's rapidly changing payments landscape where social media meets payment. The second theme revolves around branding of payment instruments and how millennials see payment versus generation X in their lives. The final theme is about creativity and its critical role in the organizations and industry today, especially how Eastern and Western definitions of creativity differ yet can be synergistic within a multinational organisation. Dennis received his BBA from the National University of Singapore and his MSc from the Nanyang Technological University Singapore.*

Abstract

This short article discusses the digital payment scenario unfolding in Singapore, a small but digitally connected country in Asia as the country's government ponders the tremendous leap made by China in the digital payment space. The article discuses possible key factors contributing to the success of digital payments in China with the success of WeChat, and whether it could be replicated in a country like Singapore. Although China and Singapore are vastly different in size, they share many similarities including a strong one-party government which is actively involved in the direction and growth of the economy. Both countries are made up of people of the Chinese race who share similar cultural and social influences including materialism, IT adoption and an emphasis on education. This article focuses on small value

payments which is often the last mile in the evolution towards a fully cashless society. Through a comparative perspective between China and Singapore, the key success factors for cashless payments success like merchant discount rate, critical mass, point-of-sale (POS) interface, mass transit cards, consumer behaviour and government policies are discussed.

Keywords: *digital payment evolution, cashless payments, small value payments, Singapore, government, China, WeChat, QR code, mass transit payment*

INTRODUCTION

The Singapore government launched an Electronic Commerce Plan back in 1998 to drive the use of electronic commerce in Singapore to position the country as an e-commerce hub[1]. The government news release went on to say that the legal and basic infrastructure services were ready for e-commerce. Singapore back then already had in excess of 2 million credit cards that were ready for electronic commerce shopping.[2]

Did this initiative succeed? Unfortunately not. Infrastructure alone is seldom the only requirement for business success in payments. What was the problem? There were insufficient merchants who accepted credit cards for online shopping.

China, however, seems to have been extremely successful in its journey towards a cashless society. From a country that used paper money for thousands of years, it has recently catapulted itself into top spot in the digital payment league. China's mobile payment volume is US$1.45 trillion in 2015, compared to the United States where it is a mere US$8.71 billion[3]. According to Ipsos and Ogilvy & Mather, mobile payments have become so pervasive and ubiquitous in China that it has become a way of life[4]. Mobile payment giants Alipay and WeChat are making the headlines in cashless payments.

> "*Since WeChat Pay was launched, I use it for almost every occasion, even when I buy a pack of cigarettes*"[5]

What are the key success factors for digital payment success? What can we learn from the evolution in China? This paper will explore seven areas of relevance:

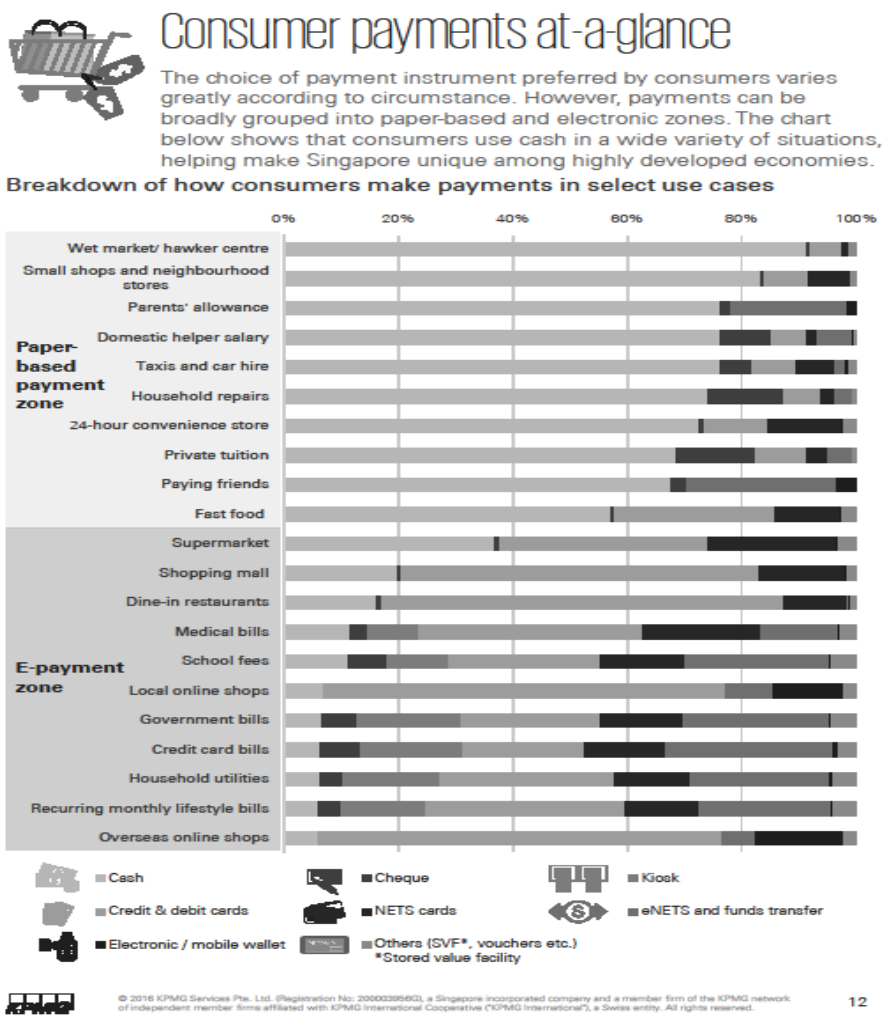
- Small value payments
- Acceptance Cost
- Type of Payment Card
- Type of Interface
- Critical Mass and Government Initiatives
- Daily use and Mass Transit Cards
- Consumer Behaviour

LOW VALUE PAYMENT MERCHANTS

The focus on the last mile in the cashless journey should be on the merchants whose transaction sizes are below $100 – the low value payment merchants where consumers make payments on a daily basis. The transactions at these merchants are typically less than $100 and in many instances even less than $40. These merchants usually accept cash as their mode of payment. The focus therefore is to displace cash at these merchants. Singapore already has good credit card coverage for the normal transaction above $100 that is found in the shopping malls and hotels around Orchard Road and the rest of the country. Instead the emphasis will have to be on the small value merchants like wet market/hawker centres, small shops, neighbourhood stores, 24-hour convenience stores and fast food outlets.

Figure 1 below shows the merchant focus within the paper-based payment zone where cash is currently the dominant payment method in Singapore.

Figure 1: Small Value Payments in Singapore



Source: Singapore Payments Roadmap Report August 2016[6]

ACCEPTANCE COST

A key barrier to merchants use of electronic payments is the cost of acceptance in the form of the merchant discount rate (MDR). The MDR is calculated as a percentage of the transaction and is paid by the merchant to the acquirer. A study by the Competition Commission of Singapore[7] found high MDR to be associated with low merchant acceptance. Throughout the author's career, anecdotal evidence also suggests that a high MDR can be a barrier to greater use of cashless payments. Table 1 below list the typical MDRs in China and Singapore for common payment types.

Table 1: Typical Merchant Discount Rates in China and Singapore

Country	Type of Payment Product	MDR
China	- WeChat[8] - Credit/Debit Card*	0.6% 1.5%-2.5%
Singapore	- Credit Card/Debit Card, Apple Pay, Android Pay, Samsung Pay* - Paypal[9] - NETS[10] - EZ-Link[10]	1.5% - 2.5% 3.9% 0.8% 0.8%

*Note: *Singapore and China MDR estimates are from industry contacts of the author. NETS is owned by the 3 local banks; EZ-Link is owned by the Singapore Government through the Land Transport Ministry – it is the default payment mode for the national subway (SMRT).*

In China, WeChat seem to have a clear cost advantage compared to credit/debit cards. This could be one reason for its huge success over a relatively short period of time. Similarly in Singapore, the NETS and EZ-Link payment options also have a lower MDR compared to credit/debit cards.

Local journalists have commented that the credit card players should move into small value payments since they already have the card base and acquiring infrastructure is already available. Unfortunately the high MDR associated with credit/debit cards is unlikely to encourage merchant acceptance of small value payments.

But why is the credit/debit card MDR so high to begin with? The reason is due to an industry internal transfer pricing item that is a key component of the MDR – called the interchange rate. Table 2 below shows a sample of interchange rates across different payment products.

Table 2: Interchange rates of Different Payment Products

Type of Card	Credit Card	Debit Card	NETS/EZLink/WeChat#
Estimated Interchange*	1.1%	0.8% - 1.1%	0%

** interchange may also vary depending on specific MCC of merchant*
 # these products do not have interchange because they are proprietary products ie on-us

The interchange rate is the cost of issuing bank providing the cardholder interest-free credit, sometimes up to 45 days, plus the cost of card rewards like bonus points promotions. It is therefore unlikely that credit/debit cards can be used for small value transactions due to the

interchange which drives up the MDR. The MDR therefore is a key consideration on whether merchants will accept electronic payments in place of cash.

TYPE OF PAYMENT CARD

Prepaid cards which are proprietary in nature (all on-us transactions) seem a logical candidate because there is no interchange which allows for a lower MDR. Prepaid cards also require advance payment. The safe-keeping of this advance payment (sometimes called escrow) is mandated by the Central Bank[11] and needs to be kept in a bank account through a custodial relationship. The advance payment allows the prepaid card provider to earn interest revenue on the amount prepaid, thereby reducing the cost of business. There is also no statutory requirement to pay the customer interest for this pre-payment, further leading to lower business costs of operation. Breakage revenue is also another important part of the business case for prepaid. It is interesting to note that China's WeChat is prepaid in nature. In Singapore, NETS and EZLink are the natural candidates since they are proprietary prepaid cards. Overall, prepaid cards are the ideal payment method for the next step in the cashless payment journey.

TYPE OF INTERFACE

The type of interface during a small value transaction is important because they typically require fast transaction speed and turnaround. Furthermore, these transactions often take place in non-conducive environments where businesses have to contend with worker shortages and long queues. In the example of having a quick morning cup of coffee from the neighbourhood corner store the shop worker makes hundreds of cups an hour, each transaction lasting less than one minute. This requires a payment interface that is speedy – no signature, no PIN and preferably contactless in nature. It also has to be simple to operate because the shop workers are often lowly educated and do not know how to initiate, let alone settle an electronic transaction. Table 3 below shows a comparison of the different POS interfaces available.

Table 3: Advantages & Disadvantages of Different Interfaces

Interface Type	Advantages	Disadvantages
Credit/Debit Card Mag Stripe Swipe Terminal	Reasonable cost	Slow – signature or PIN Needs cashier or cardholder action
Credit/Debit Card Chip Terminal	Moderate cost	Slow – signature or PIN Needs cashier or cardholder action
QR Code	Fast transaction time Does not require merchant action Infrastructure is cheap (mobile phone is QR reader)	Needs cardholder action Requires card account on mobile phone
Contactless NFC/PayWave/PayPass/EZLink/NETS FlashPay	Very fast transaction time	Terminals are expensive Needs cashier action

Source: Author's own analysis

All things considered, the QR code interface is currently the best option moving forward because it balances between a reasonably fast transaction, requires no manual intervention by the shop worker, and most importantly, cost very little to implement. There is no terminal required other than a QR code printout at the point-of-sale since the customer's mobile phone doubles up as the QR code reader. It is interesting that China's WeChat uses the QR code interface. The photo below shows a WeChat transaction taking place using QR code and a mobile phone.

Source: www.tmogroup.asia1[6]

The examples above point to the need to carefully evaluate the different payment interfaces so that one that is appropriate to the context of a low value transaction is adopted for implementation.

CRITICAL MASS & GOVERNMENT INITIATIVES

Size matters in payments because the business runs on thin margins but huge volumes. A larger critical mass therefore will allow the provider to recoup his fixed costs over a larger base of customers. This is particularly true for the prepaid card business since they do not earn revolving interest unlike credit cards. This is by far the most pressing issue for Singapore. Compared to China, Singapore has a miniscule domestic market as seen in Table 4 below.

Table 4: Singapore and China domestic market size and GDP

Country	Population	GDP
Singapore	5.6 Million	US$296,966 Million
China	1,382 Million	US$11,232,108 Million

Source: World Economic Forum Reports, Global Information Technology Report 2016[12]

Furthermore, the Singapore market is an open market that welcomes foreign players. China on the other hand prohibits foreign players from competing on a level playing field with domestic players, thereby leaving the large domestic market to the local players.

To overcome the lack of critical mass, the Singapore government has begun to spearhead the move to cashless payments. The government initiative will help the cost of funding the infrastructure since commercial players in a small country like Singapore cannot achieve the

necessary volumes to make a business case of funding it. The government has also created a common payment QR standard which will pave the way for inter-operability between different payment types for low value payments. Figure 2 below illustrates the projects under the Smart Nation Initiative[15] which includes e-Payment as a necessary pillar, together with a common QR standard and acquiring infrastructure in low value merchant locations like convenience stores and hawker centres.

Figure 2: The Smart Nation Initiative's Key Milestones

Source: GovTech Singapore: Strategic National Projects to Build a Smart Nation[13]

Critical mass is an significant factor for small value payment success. And where this is not forthcoming, a government-led initiative to coordinate and partially fund the infrastructure is required.

DAILY USE AND MASS TRANSIT CARDS

Mass transit cards are well suited for low value transitions because they possess the huge numbers of users, often using the card on a daily basis. One possible reason for WeChat's success in China – most people already hold a mobile phone and use the WeChat social media application daily.

However, for these mass transit cards to be used for retail low value payments, they first have to migrate from local card value (value is stored locally in the card) to an "account-based

ticketing"[14](ABT) framework whereby the card value is stored in the server. This will then enable the value to be accessed using different devices, including the mobile phone.

Many transit operators around the world have started on the migration to account-based ticketing (ABT), in preparation for a more seamless and device-agnostic payment landscape for transport. These include Octopus in Hong Kong, Oyster in London and EZ-Link in Singapore. The Singapore government, in its foresight, has also included ABT as part of its strategic initiatives within the Smart Nation Initiative.

In summary, mass transit cards are good options for use at low value payment once they are migrated unto an ABT platform for use on mobile phones in conjunction with QR codes.

CONSUMER BEHAVIOUR

A successful payment rollout must study consumer payment behaviour and think of an intervention program to encourage new behaviours from using cash to using electronic payment methods. As can be seen in Table 5 below, Singapore ranks much higher than China in their overall capacity for overall IT adoption. A higher ranking (lower number) denotes higher day-to-day usage likelihood.

Table 5: IT Usage Ranking – China versus Singapore

IT Usage Ranking	China	Singapore
Individual Usage	75	12
Business Usage	44	14
Government Usage	40	1
Overall IT Usage Sub-Index	51	1

* *the higher the number means a higher likelihood of using IT. The usage sub index assesses the individual efforts of the main social agents, i.e. individuals, business and governments, to increase their capacity to use ICT, as well as their actual use in their day-to day activities with other agents. It is a rank out of 139 economies globally.*

Source: World Economic Forum Reports, Global Information Technology Report 2016[12]

While Singapore ranks much higher relative to China, Singaporeans are known to require financial motivation for a change in consumer behaviour. Therefore, any introduction of new payment methods will need to be supported by an advertising and promotional programs which should incentivize customers to use electronic payments rather than cash. Rewards for new behaviour like discounts or loyalty points are encouraged.

CONCLUSION

The journey towards a cashless society requires consideration of many factors. Low value merchant category focus, merchant discount rate, domestic market size, payment interface, role of mass transit cards and strategic government intervention are some of the key issues that need to be considered. It is heartening that the Singapore government is leading this drive as part of the Smart Nation initiative. This initiative will coordinate the building of a nationwide acquiring infrastructure built on QR codes. The government's leadership to spearhead standards and coordinate a common platform among the disparate commercial payment providers for the greater good of society is also a key learning point.

All things considered, unlike in 1998 when the Singapore government created the infrastructure but without success, the government's leadership may this time possibly be the lynchpin to a truly cashless society for Singapore.

AUTHOR'S NOTE

All errors are the author's. The views expressed in this paper are those of the author and do not necessarily reflect those of the Lee Kong Chian School of Business, Singapore Management University, Singapore.

REFERENCES AND NOTES

1. Infocomm and Media Development Authority website, Media Releases, doi: 26/08/2017)

2. Monetary Authority of Singapore, Credit and Charge Card Statistics, Table I.17

3. iResearch Global, China's Third-Party Mobile Payment Market Shot up 69.7% in 2015. April 2016.

4. Ipsos and Ogilvy & Mather, The Cashless Mobile Life, September 2016.

5. Ipsos Research. Smart Life: A Cashless Reality, August 2017.

6. Monetary Authority of Singapore 2016, "Singapore Payments Roadmap Report August 2016"

7. Competition Commission Singapore, 3 Sept 2013, Notice of Decision Issued By The Competition Commission of Singapore In Relation to a Notification for Decision by Visa Worldwide Pte Ltd of its MIF system as formalised in the Visa Rules, para 10.55, 10.61, 10.64, 10.667. World Economic Forum Report. Global Information Technology Report, 2016.

8. Walk The Chat, Aug 2017, "How To Set Up WeChat Pay", www.walkthechat.com

9. Straits Times, 24 Aug 2017, 'Can Singapore Catch Up In Race To Go Cashless?"

10. DBS Bank July 2016, Go Cashless Merchant Promotion Fee List

11. Monetary Authority of Singapore, June 2006, Stored Value Facility Guidelines

12. World Economic Forum Reports, Global Information Technology Report 2016

13. GovTech Singapore 21 Aug 2017 (www.tech.gov.sg), "Strategic National Projects to Build A Smart Nation"

14. Masabi (http://blog.masabi.com), "What is Account Based Ticketing"

15. China Web at www.china.org.cn "What Is Renminbi (RMB)"

16. TMG Group Asia Mar 2016, "These 4 Strengths of WeChat Pay Solution Will Improve Your 020 Commerce"